WHAT IS CLAIMED IS:

1. A frequency synchronizing method in an OFDM wireless system for synchronizing oscillation frequency of a receiving device to oscillation frequency of a transmitting device, comprising steps of:

receiving, from the transmitting device, frames in which symbols having identical time profiles have been embedded;

calculating a correlation value between the identical time profile portions in neighboring frames of a receive signal;

obtaining the phase of said correlation value as a frequency deviation between the transmitting device and the receiving device; and

controlling oscillation frequency based upon said phase.

2. A frequency synchronizing method according to claim 1, further comprising steps of:

successively calculating correlation values, in symbol intervals, between a receive signal that prevailed one frame earlier and a currently prevailing receive signal; and

adopting a peak correlation value, at which power of the correlation values peak, as said correlation value of said identical time profile portion.

3. A frequency synchronizing method according to claim 2, wherein symbols having said identical time profile are embedded in identical portions of each of the frames.

4. A frequency synchronizing method in an OFDM wireless system for synchronizing oscillation frequency of a receiving device to oscillation frequency of a transmitting device, comprising steps of:

receiving, from the transmitting device, frames in which n-number of first to nth symbols having prescribed time profiles have been embedded;

calculating and summing correlation values of n sets of corresponding time profile portions in neighboring frames of a receive signal;

obtaining the phase of said sum value as a frequency deviation between the transmitting device and the receiving device; and

controlling oscillation frequency based upon said phase.

5. A frequency synchronizing method according to claim

4, wherein said n-number of first to nth symbols are embedded in identical portions of each of the frames.

6. A frequency synchronizing method according to claim 4, wherein said n-number of first to nth symbols are embedded equidistantly in each of the frames.

7. A frequency synchronizing method according to claim 6, further comprising steps of:

successively calculating correlation values, in symbol intervals, between a receive signal that prevailed one frame earlier and a currently prevailing receive signal; and

summing corresponding correlation values at cycles of 1/n frame, obtaining a peak correlation value at which power peaks, and adopting this peak sum value as said sum value.

8. A frequency synchronizing method in an OFDM wireless system for synchronizing oscillation frequency of a receiving device to oscillation frequency of a transmitting device, comprising steps of:

receiving, from the transmitting device, frames having a plurality of symbols in which a guard interval has been inserted and in which symbols having identical time profiles have been embedded;

calculating a correlation value (a first correlation value) between a time profile in a guard interval and a time profile of a symbol portion that has been copied to a guard interval, obtaining the phase of said first correlation value as a frequency deviation between the transmitting device and the receiving device, and controlling oscillation frequency based upon said phase; and

when a predetermined condition holds, calculating a correlation value (a second correlation value) between identical time profile portions in mutually adjacent frames of a receiving signal, obtaining the phase of said second correlation value as a frequency deviation between the transmitting device and the receiving device, and controlling oscillation frequency based upon said phase.

9. A frequency synchronizing method according to claim 8, further comprising steps of:

successively calculating correlation values, over guard-interval widths, between a receive signal that prevailed one symbol earlier and a currently prevailing receive signal, and adopting a correlation value at

which power peaks as said first correlation value; and

successively calculating correlation values, over symbol-interval widths, between a receive signal that prevailed one frame earlier and a currently prevailing receive signal, and adopting a correlation value at which power peaks as said second correlation value.

10. A frequency synchronizing method in an OFDM wireless system for synchronizing oscillation frequency of a receiving device to oscillation frequency of a transmitting device, comprising steps of:

receiving, from the transmitting device, frames having a plurality of symbols in which a guard interval has been inserted and in which n-number of first to nth symbols having prescribed time profiles have been embedded;

calculating a correlation value (a first correlation value) between a time profile in a guard interval and a time profile of a symbol portion that has been copied to a guard interval, obtaining the phase of said first correlation value as a frequency deviation between the transmitting device and the receiving device, and controlling oscillation frequency based upon said phase; and

when a predetermined condition holds, calculating and summing correlation values of n sets of corresponding time profile portions of two neighboring frames of a receive signal, obtaining the phase of said sum value as a frequency deviation between the transmitting device and the receiving device, and controlling oscillation frequency based upon said phase.

11. A frequency synchronizing method according to claim 10, further comprising steps of:

successively calculating correlation values, over guard-interval widths, between a receive signal that prevailed one symbol earlier and a currently prevailing receive signal, and adopting a correlation value at which power peaks as said first correlation value; and

when n-number of first to nth symbols have been embedded equidistantly in each of the frames, successively calculating correlation values, over symbol-interval widths, between a receive signal that prevailed one symbol earlier and a currently prevailing receive signal, summing corresponding correlation values at cycles of 1/n frame, obtaining a peak sum value at which power peaks, and adopting this peak sum

value as said sum value.

12. A frequency synchronizing method according to claim 8, wherein said predetermined condition is assumed to hold when said phase has fallen below a set value or when a set period of time has elapsed since start of control.

13. A frequency synchronizing apparatus for synchronizing oscillation frequency of an OFDM receiving device to oscillation frequency of an OFDM transmitting device, comprising:

a receiving unit for receiving frames in which symbols having identical time profiles have been embedded;

a correlation arithmetic unit for calculating a correlation value between the identical time profile portions in neighboring frames of a receive signal;

a phase detector for obtaining the phase of said correlation value as a frequency deviation between the transmitting device and the receiving device; and

an oscillation frequency controller for controlling oscillation frequency based upon said phase.

14. A frequency synchronizing apparatus according to claim 13, wherein said correlation arithmetic unit has:

means for successively calculating correlation values, in symbol intervals, between a receive signal that prevailed one frame earlier and a currently prevailing receive signal; and

means for adopting a peak correlation value, at which correlation power peaks, as said correlation value of said identical time profile portion.

15. A frequency synchronizing apparatus for synchronizing oscillation frequency of an OFDM receiving device to oscillation frequency of an OFDM transmitting device, comprising:

a receiving unit for receiving frames in which n-number of first to nth symbols having prescribed time profiles have been embedded;

a correlation arithmetic unit for calculating and summing correlation values of n sets of corresponding time profile portions in neighboring frames of a receive signal;

a phase detector for obtaining the phase of said sum value as a frequency deviation between the transmitting device and the receiving device; and

an oscillation frequency controller for

controlling oscillation frequency based upon said phase.

16. A frequency synchronizing apparatus according to claim 15, wherein said correlation arithmetic unit has:

means for successively calculating correlation values, in symbol intervals, between a receive signal that prevailed one frame earlier and a currently prevailing receive signal in a case where n-number of first to nth symbols have been embedded equidistantly in each of the frames;

a summing unit for summing corresponding correlation values at cycles of 1/n frame; and

means for adopting a sum value at which power peaks as said sum value.

17. A frequency synchronizing apparatus for synchronizing oscillation frequency of an OFDM receiving device to oscillation frequency of an OFDM transmitting device, comprising:

a receiving unit for receiving frames having a plurality of symbols in which a guard interval has been inserted and in which symbols having identical time profiles have been embedded;

first frequency control means for calculating a correlation value (a first correlation value) between a time profile in a guard interval and a time profile of a symbol portion that has been copied to a guard interval, obtaining the phase of said first correlation value as a frequency deviation between the transmitting device and the receiving device, and controlling oscillation frequency based upon said phase;

second frequency control means for calculating a correlation value (a second correlation value) between identical time profile portions in mutually adjacent frames of a receiving signal, obtaining the phase of said second correlation value as a frequency deviation between the transmitting device and the receiving device, and controlling oscillation frequency based upon said phase; and

control changeover means for changing over frequency control to the second frequency control means when said phase has fallen below a set value by control performed by the first frequency control means or when a set period of time has elapsed since start of control by the first frequency control means.

18. A frequency synchronizing apparatus according to claim 17, wherein said first frequency control means

successively calculates correlation values, over guard-interval widths, between a receive signal that prevailed one symbol earlier and a currently prevailing receive signal, obtains a correlation value at which power peaks as said first correlation value, and obtains the phase of said first correlation value as a frequency deviation between the transmitting device and the receiving device; and

said second frequency control means successively calculates correlation values, over symbol-interval widths, between a receive signal that prevailed one frame earlier and a currently prevailing receive signal, obtains a correlation value at which power peaks as said second correlation value, and obtains the phase of said second correlation value as a frequency deviation between the transmitting device and the receiving device.

19. A frequency synchronizing apparatus for synchronizing oscillation frequency of an OFDM receiving device to oscillation frequency of an OFDM transmitting device, comprising:

a receiving unit for receiving frames having a plurality of symbols in which a guard interval has been inserted and in which n-number of first to nth symbols having prescribed time profiles have been embedded;

first frequency control means for calculating a correlation value (a first correlation value) between a time profile in a guard interval and a time profile of a symbol portion that has been copied to a guard interval, obtaining the phase of said first correlation value as a frequency deviation between the transmitting device and the receiving device, and controlling oscillation frequency based upon said phase;

second frequency control means for calculating and summing correlation values of n sets of corresponding time profile portions of two neighboring frames of a receive signal, obtaining the phase of said sum value as a frequency deviation between the transmitting device and the receiving device and controlling oscillation frequency based upon said phase; and

control changeover means for changing over frequency control to the second frequency control means when said phase has fallen below a set value by control performed by the first frequency control means or when a set period of time has elapsed since start of control

by the first frequency control means.

20. A frequency synchronizing apparatus according to claim 19, wherein said first frequency control means successively calculates correlation values, over guard-interval widths, between a receive signal that prevailed one symbol earlier and a currently prevailing receive signal, obtains a correlation value at which power peaks as said first correlation value, and obtains the phase of said first correlation value as a frequency deviation between the transmitting device and the receiving device; and

said second frequency control means successively calculates correlation values, over symbol-interval widths, between a receive signal that prevailed one frame earlier and a currently prevailing receive signal in a case where n-number of first to nth symbols have been embedded equidistantly in each of the frames, sums corresponding correlation values at cycles of 1/n frame, adopts a peak sum value at which power peaks as said sum value and obtains the phase of said peak sum value as a frequency deviation between the transmitting device and the receiving device.